

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

The AGRICULTURAL SITUATION

Bureau of Agricultural Economics •

U. S. Department of Agriculture

Volume 32

MARCH-APRIL 1948

Numbers 3-4

Farmers' Intentions to Plant.....	Harold R. Walker	1
Outlook Highlights.....		2
Many Farmers Not Prosperous.....	John Heilman	5
Nutrition Survey in Richmond.....	Edw. O. Moe and Abraham Weisblat	7
A Century of Farm Mechanization.....	Martin R. Cooper and Glen T. Barton	9
Peanuts Move Up as a Cash Crop.....	Kenneth L. Bachman	11
Fight Against Rats and Insects.....	Kenneth W. Olson	15

Farmers' Intentions To Plant

WHAT will the new crop year bring in the way of acreage and production of crops? Producers, processors, and consumers all want to know something about this as early as practicable. That is why the Crop Reporting Board prepares its report each year on prospective plantings as of March 1. The report issued March 19, 1948, was a Silver Anniversary number, the 25th in this annual series.

The Crop Reporting Board, in the last six of these reports, has included some "if" statements on what the current year's production of spring-planted crops might be. They say that if the intended acreage is planted and if the yield should be about the average of some recent period, by States, production will be about so-many bushels of grain or tons of hay.

Subject to these "ifs," the 1948 corn crop may be 3 billion bushels, and all wheat may reach 1,110 million bushels—both fairly large crops. Similarly, we might get production of 1,370 million bushels of oats, 284 million bushels of barley, 112½ million bushels of sorghum grain, 74 million bushels of rice, 184 million bushels of

soybeans, 37½ million bushels of flaxseed, 2.1 billion pounds of peanuts, 1,650 million pounds of tobacco, and 102 million tons of hay. Of other crops we might get 396 million bushels of potatoes (if potato yields equal 1947), 52 million bushels of sweetpotatoes, 15.7 million bags of dry beans, 5.9 million bags of dry peas, and 10.8 million tons of sugar beets.

In setting up these guideposts for acreage and production, the Crop Reporting Board recognizes that many factors have a bearing on the outcome, chief of which is the weather. The report released this March was based upon information from nearly 62,000 farmers representing a strategically located cross section of farms all over the country, each reporting on his individual plans and operations.

The Board assumes that farm operators have by this time correctly appraised their situation regarding labor, supplies of farm machinery, seeds, and fertilizers, farm management practices they hope to follow, and the income possibilities of the various crops. But there may be changes in some of these factors, perhaps in prices. Perhaps

Outlook Highlights

DEMAND SUMMARY: Demand for farm products is not likely to be as strong this year as last, but will surpass 1943.

EXPORTS: If world crop production turns out as big as expected, foreign countries this year will buy less U. S. farm products than in 1947. The value of our farm exports may be 15 to 20 percent below the 1947 record.

PRICES: For the year, prices received by farmers probably will average below 1947 but above 1946. Farmers' cash receipts are likely to be down from last year but by less than 10 percent. Net income may be off somewhat more, as farmers' costs will be higher. . . . Commodity prices generally have been stable since the February decline in some farm products and foods.

BUSINESS: Last year, business activity was buoyed up chiefly by large expenditures for new houses, plants and equipment, and inventories; a large surplus of exports over imports, heavy spending by consumers, and large public expenditures. This year, the first two factors may be somewhat smaller than in 1947. However, larger outlays for national defense may offset these reductions.

CONSUMER SPENDING: Consumers' expenditures went up faster in 1946 and 1947 than their incomes. This was possible because of an increase in the use of credit to record levels, a cut in the rate of savings and perhaps by drawing on previous savings.

FEED: If farmers plant as much corn, oats, barley and sorghums as they intended on March 1, total 1947 acreage will be around 157 millions, up 3 percent from 1947 but down 6 percent from the 1942-46 average. If yields by States equal 1942-46, production of the four grains would be about 116 million tons, about one-fifth above 1947. . . . Prices of feed grains this summer and fall will depend largely on progress of 1948 feed crops.

LIVESTOCK AND MEAT: Meat output under Federal inspection was about 10 percent lower in January-March than a year earlier. Production is likely to continue below a year earlier in each of the next 3 quarters. . . .

DAIRY PRODUCTS: Prices of most dairy products will decline through June as output increases seasonally, but probably will remain above a year earlier.

EGGS: Egg consumption is likely to continue near 1947 levels. Output may be down as much as 5 percent. As a result, fewer eggs will be bought for price support and export.

FATS AND OILS: During the next six months, prices of most food and soap fats probably will average at least as high as in March.

FRUITS AND VEGETABLES: Orange prices may rise further in April and May, though less than seasonally. Prices of most other fruits are expected to hold at mid-March levels. . . . Prices received by farmers for fresh vegetables will fall seasonally, although demand is expected to continue strong. . . . Cold weather has slowed 1948 early potatoes. This will help complete marketings of old crop. Prices of 1947 potatoes during next two months are expected to be slightly above support levels.

COTTON: U. S. mills have been using cotton at a rapid rate, although slower than a year earlier. Through first 7 months of the season, mills used 5.4 million bales. However, slower rate in later months may hold 12 months' consumption to 9 million.

current delays in getting started will crowd the planting season into such a short space of time that the acreage of spring grains may be limited in some areas. Excessive spring rains could increase this possibility. If this should happen it could mean larger acreages of corn, soybeans, and buckwheat, which are normally planted later. Possibilities like these, together with the knowledge of what other farmers plan to do, may bring about shifts in acreages as the season progresses.

For 1948, the current report on prospective planting says that farmers expect to plant a larger total acreage of principal crops than in any of the last three seasons, if spring weather permits. Up to mid-March, spring had been slow to arrive and winter had held on in much of the country, delaying preparatory work, particularly in the South. But, hopefully, growers plan to increase the total acreage of feed grains over those they were able to plant last year, to relieve the current shortage of feed.

Spring plantings of food grains will be relatively large, but not up to 1947 totals. Acreages of oilseeds may be smaller, for though more flax is planned, there will be less soybean and peanut acreage. Potatoes will be planted on a slightly larger acreage, but there will be less acreage in beans, peas, sugarbeets, and tobacco. To permit increases elsewhere, hay meadows and pastures may be reduced and idle land put back into crops. Supplies of soil moisture are adequate in practically all areas, except in the far Southwest and California. Supplies of fertilizer and new machinery are improved and are not likely to limit the spring plantings.

The total acreage of principal crops planted or grown in 1948 may exceed 361 million acres, allowing for duplications and for certain crops not yet sur-

veyed. This exceeds by 3.2 million acres, or nearly 1 percent, the 1947 total of almost 358 million acres. With the exception of the wartime peaks in 1943 and 1944, this total is the largest since 1937; the largest acreage planted or grown was 375½ million acres in 1932.

Feed grains will be grown on about 5.1 million acres more than in 1947, if present plans materialize, which is an increase of more than 3 percent. The corn acreage is indicated at approximately the same as the small 1947 total. But planned acreages of oats and barley are up 8 and 5 percent respectively, apparently mostly to get quick additions to the feed supply. Sorghums for all purposes will be up 11 percent. The number of grain-consuming animal units on January 1, 1948, was nearly 4 percent less than a year before, but carry-over stocks from 1947 crops of feed grains are expected to be relatively small.

Acreage devoted to food grains is likely to exceed that of last season by a very slight margin. To a record winter-wheat acreage may be added a spring-wheat acreage only slightly smaller than in 1947, to give a planted acreage of all wheat a half-million acres larger than last year. Rye acreage is larger and rice acreage is expected to be only 1 percent smaller. Winter wheat may have suffered some setback from the severe cold and storms of March 10 to 13, in the Great Plains area, but little actual loss of acreage is expected. Total abandonment of winter wheat, however, is expected to be much larger than in the last two seasons.

Oilseeds, as a group, will be grown on acreages smaller than the goals or than grown last year, despite an increase in flax. Soybeans grown alone will probably be nearly 10 percent less than last year and peanuts

The Agricultural Situation is issued monthly by the Bureau of Agricultural Economics, United States Department of Agriculture. It is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business and approved by the Director of the Budget.

Editor: Bert Johnson

Single copy 5 cents, subscription price, 50 cents a year, foreign 70 cents, payable in cash or money order to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

The AGRICULTURAL SITUATION is sent free to crop and price reporters in connection with their reporting work

grown alone will be about 4 percent less. With plantings as now indicated and with usual conditions during the growing season, the acreage of soybeans for beans may be 11 percent less than in 1947; peanuts picked and threshed also may be less.

Hay acreage will be slightly smaller than last year, in accord with fewer livestock. Tobacco is down 18.5 percent with the reduction in flue-cured allotments the most important element. Potato acreage will be nearly 1 percent larger, but sweetpotatoes will be 9 percent smaller than last year. Dry beans may be down only 1.5 percent, but dry peas will be down nearly 15 percent. The acreage of sugar beets is expected to be nearly 7 percent less than in 1947.

Farming was retarded in the South to the extent that it had become late for seeding spring oats. In the North the delay is not serious as yet and could be readily overcome, as the depth of frost in the ground was less than usual when the intentions were reported. This might also reduce the amount of run-off water by permitting the melting snow-water to soak into the soil and increase the supply of moisture.

Farm labor does not appear to be a limiting factor in most sections.

Smaller acreages are planned for most crops that have high labor requirements. In parts of the Midwest the demand for farms by tenants is greater than the available number, and from the South it is reported that many large farms have their full quota of croppers for the first time in several years.

Farm machinery is increasingly available, but supplies of new implements are not equal to demands. This is especially true of tractors. But the machinery now in use will permit farmers to make rapid progress with field work when that becomes possible. Seed supplies of practically all kinds except red clover appear to be ample. More fertilizer is being produced than in any previous year; although its production is about double prewar, the supply does not equal the demand, especially for nitrogen fertilizers in the South.

The shift from intensive row crops to the more extensive crops such as small grains, although due partly to the need for early feed, is a step toward better rotations, more land in grass next season, and better soil-conserving practices. Farmers apparently interpret current economic conditions as indicating favorable returns from investments and efforts in farming.

Prospective Plantings for 1948

Crop	Planted acreages			
	Average 1938-47	1947	Indicated 1948	1948 as percent of 1947
	Thousands	Thousands	Thousands	Percent
Corn, all.....	91,696	86,168	86,131	100.0
All spring wheat.....	18,612	19,879	19,789	99.5
Durum.....	2,701	2,952	3,082	104.7
Other spring.....	15,911	16,927	16,697	98.6
Oats.....	42,130	42,501	45,709	107.5
Barley.....	14,632	12,030	12,660	105.2
Flaxseed.....	3,189	4,157	4,401	105.9
Rice.....	1,319	1,687	1,666	98.8
Sorghums for all purposes.....	16,936	11,700	12,983	111.0
Potatoes.....	2,897	2,147	2,162	100.7
Sweetpotatoes.....	733	618	560	90.7
Tobacco ¹	1,644	1,875	1,528	81.5
Beans, dry edible.....	2,008	1,839	1,811	98.5
Peas, dry field.....	460	551	470	85.3
Soybeans ²	10,944	12,894	11,659	90.4
Cowpeas ²	2,710	1,143	1,039	90.9
Peanuts ²	3,254	4,156	3,988	96.0
Hay ¹	73,018	75,291	74,215	98.6
Sugar beets.....	854	966	902	93.4

¹ Acreage harvested.

² Grown alone for all purposes. Partly duplicated in hay acreage

The most marked changes in aggregate acreages from the 1947 level are the declines in the South, from North Carolina and Tennessee southward, and in the Southwest. The decline is nearly 7 percent in North and South Carolina, which are most affected by the excessive moisture conditions. In contrast, in the Southwest, dry weather and possible shortage of irrigation water are influences. The declines are 2.6 percent in the South Atlantic and 1.2 percent in the South Central region. These are more than offset by increases of 3.1 percent in the North Atlantic region, 0.8 percent in the North Central region, and 1.0 percent in the West.

The most decided increases are in New York, Ohio, and Michigan, where unfavorable spring conditions in 1947 reduced plantings; in Missouri where lands made idle by floods in 1947 are

going back into crops; and in Washington and Oregon where favorable conditions have brought new lands into cultivation. Declines in Great Plains States, from Nebraska and Colorado to Texas and New Mexico, may mean merely that at this time less abandoned winter-wheat lands is known to be available for replanting to spring crops like sorghums and corn.

So farmers have now told us what they intend to do, and the Crop Reporting Board has made its statement of what these plans may mean in acreages and production of crops. From this, if we watch the weather and its effects, we can draw our own conclusions as the season progresses, as to what the outcome may be.

HAROLD R. WALKER

Bureau of Agricultural Economics

Many Farmers Not Prosperous

MANY farmers, even in these boom times, are far from prosperous. Take the case of Jim White, for example. A lot of farmers around the country are better off than Jim, in a money way, but more of them are worse off. Jim and his family farm a place in the Cotton Belt. Last year Jim took in about \$1,500 cash from his farm. Out of that he had to pay for fertilizer, hired labor, some gas and oil, machinery repairs, and his other cash costs of production. These costs took nearly half of his year's cash.

He may have had as much as \$750 cash left for personal and family use. His net income was somewhat larger than that, because of the value of the farm products he used at home and the rental value of his house. Perhaps his total net income was around \$1,000. This was all the pay he got—in cash and in kind—for his own labor and management, for the unpaid labor of his family, and for return on his share of the farm investment. His family's cash expenses—for shoes, clothes, schoolbooks, bought groceries, doctor bills, and the like—had to be paid out of the cash that was left after paying his cash production expenses. With luck, he probably had enough money left over at year's end to buy a savings bond or two.

Jim is doing better now than a few

years ago, for these are boom times. Still, he isn't making a killing. And he and his family are typical farm folks in a lot of ways. Millions are probably in about the same shape or worse—North, South, East, and West.

According to the 1945 Census of Agriculture, nearly a third of our farms in 1944 each grew less than \$1,000 worth of products. Nearly 60 percent of all farms each turned out less than \$2,000 worth of products. Nearly three-fourths of our farms grew less than \$3,000 worth of products. The operators of these farms took in much less cash than the amount of those figures—and still had to pay their production costs.

A great many in this big group are not now able to meet their farm and family costs from farm incomes. Many of these farms, of course, are part-time and subsistence units.

The net income of all farmers put together is now the highest on record. But Jim White is not much interested in that. He is more interested in the fact that about half—around 3,000,000—of the Nation's farmers each grew less than \$1,500 worth of products in 1944. Their average output was \$670 worth of products per farm, counting the farm products they used at home. Their average production for sale averaged

only \$408 each. And this \$408 in 1944 would buy about as much nonfarm goods as would \$298 in 1939.

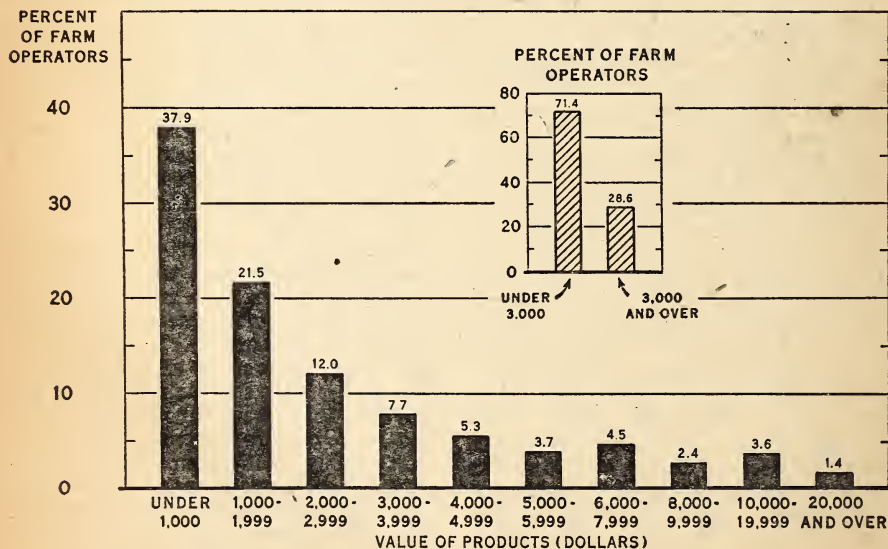
Farmers' bank accounts and savings bonds roughly reflect their savings. According to The Agricultural Situation for January 1947—"though farmer holdings of cash, bank deposits, and bonds are at record levels, these savings are concentrated in relatively few hands, with many farmers having only small amounts." Estimates show that on June 1, 1946, 10 percent of the farm operators had 70 percent of the demand deposits and half had none. Ten percent of the farm operators had three-quarters of the United States Savings Bonds held by farmers and half had none.

High operating costs are already pinching farmers and costs are still rising. During the war, prices received by farmers rose more than prices paid but in the past year both kinds of prices have gone up about the same rate. Better prices have helped farmers, but not all to the same degree. For the big majority of farmers, net incomes are far from large.

On a small farm, the Farmers Home Administration estimates a family farmer needs about \$1,500 gross farm income (including the value of his farm products that are used at home and the rental value of his house) to meet expenses. This is an average figure for Farmers Home Administration borrowers, based on studies made in 1947. This gross farm income might include about \$908 in cash and about \$558 worth of products grown for home use. The borrower would need to use the \$908 to pay farm-operating costs of \$476 and cash family-living costs of \$432. But, of course, a large part of the Nation's farm operators have less than \$1,500 gross income.

Crop failures also take their toll, even in good times. Every year many farmers suffer crop failure or other disaster. In 1944, the crops of more than 385,000 farmers failed on 10,297,172 acres, according to the latest census. In 1929 about twice as many farmers had crop failures. Often a crop failure that would mean little bother to a larger operator proves a knock-out blow

**FARMS CLASSIFIED BY TOTAL VALUE OF FARM PRODUCTS
SOLD OR USED—PERCENT DISTRIBUTION ***
(CENSUS OF AGRICULTURE—1945)



* EXCLUDES FARM OPERATORS REPORTING "0" VALUE OF FARM PRODUCTS

to a small farmer. The small farmer also is apt to have more crop failures than the larger operator, because he usually farms poorer land, uses poorer production methods, and is not as well equipped.

Of the 50 percent of the farmers who produced less than \$1,500 worth of products in 1944, many have insecure tenure and poor farm buildings and they lack modern farm facilities.

Low-income farmers often are unable to get credit from banks or other sources. Some of them are financed through the Farmers Home Administration. Many others are forced to rely on credit from time merchants,

fertilizer dealers, ginners, commission brokers, other private firms, and land owners. Their loans often are at high interest. The types of credit that are available may not help these farmers to make needed changes on their farms.

In brief, much of our agriculture is by no means prosperous. The over-all averages are high, but they do not tell us the actual conditions under which the bulk of farmers work and live. We need to look behind the averages so we can see clearly the Jim Whites and the lower income half of our farmers.

JOHN HEILMAN

Farmers Home Administration

Nutrition Survey in Richmond

War brought the question of food to the forefront of citizen thinking. Everyone became unusually interested in food. That was evident everywhere. But how much did the people know about adequate nutrition and the need for good diets as a means of protecting family health and well-being? And how much attention were families paying to the facts of scientific eating?

After the war food program had been under way about 2 years, including an intensive educational program, its leaders decided it was time to take stock. First, what was the level of nutrition information among housewives? How many housewives were being reached with the information now being sent out? What were the best means by which information could be spread? How could more women be persuaded to use the information? The Nutrition Programs Branch of WFA asked the Bureau of Agricultural Economics to find answers to some of these questions, in selected localities, hoping in this way to learn how to increase the effectiveness of the program.

In 1943, studies were made by the Bureau of Agricultural Economics in two cities that had had rather intensive programs—Richmond, Va., and Bridgeport, Conn. Again in 1947 a similar survey was made in Richmond. This study is described here and certain comparisons are made with results of the survey made 4 years earlier.

There were three main objectives:

1. To measure the level of informa-

tion regarding nutrition among housewives in an urban community and to learn the attitudes of the housewives toward nutrition.

2. To analyze the effectiveness of the various media that had been used in the dissemination of nutritional information.

3. To attempt to ascertain certain prime motivating factors that can be used as a basis for education procedures designed to promote more widespread use of nutrition information among housewives.

Data were gathered through personal interviews in which persons were given a chance to talk freely about problems mentioned by the interviewer. The interviewer used a questionnaire that included 96 questions. The interviews averaged 1 hour and 10 minutes in length. The interviewing was done in June and July 1947 by trained members of the staff of the Division of Special Surveys of BAE.

The sample was drawn from all of the homemakers in the metropolitan area of Richmond. This area included the city proper and a small part of Henrico and Chesterfield Counties. A homemaker was defined as the person in the household who has the major responsibility for planning and preparing meals. Sample blocks in the area were selected (with the use of census-block statistics) to give a representative cross section of all homemakers. Four hundred women were interviewed, representing 200 blocks or sample points.

An attempt was made to evaluate the housewife's knowledge of nutrition.¹ The scale developed for this evaluation was set in three groups: adequate understanding, some understanding, and little or no understanding of nutrition. The rating scale for the upmost or adequate group was designed to include the housewives who had a good working knowledge of nutrition information. This knowledge would not approach that of a trained nutritionist but it was expected that these housewives would have some nutrition knowledge that was definite and fairly accurate and then be able to qualify it in a general way. An answer like the following would place her in this group: "Meat was included in the meal because it contains proteins needed for building body tissues." Answers given without any qualification would fall in the middle group—some information on nutrition. A response that did not contain any nutrition information, such as, "Meat is included because we like it," would fall into the last group—little or no information on nutrition. Responses to several questions used in this rating scale were individually ranked into the low, middle, or upper group. The rank scores for these questions were then combined to obtain the over-all level of nutrition knowledge of the person interviewed. In the 1943 survey the answers were coded on this same rating scale.

Analysis of the scores indicates that slightly less than half the housewives in Richmond had some knowledge of modern nutritional science. A very small proportion (4 percent) were scored as having adequate information. One-half were scored as possessing little or no nutrition information.

Lack of adequate nutrition information does not necessarily mean that these housewives were serving inadequate diets. When the adequacy of the daily menu was evaluated,² it was found

that about half of the housewives provided at least the minimum number of servings suggested for each food group. But for the most part these are also the women who have either adequate or some knowledge of nutrition. There is no statistically significant difference between these figures and the comparable percentage that were found in the 1943 survey in Richmond.

Close to three out of four of the housewives said they would like to have additional information. These housewives show definite preference for certain kinds of information. Apparently facts about food and its preparation will be well received. A high proportion said they want more information about new dishes and recipes. They do not show the same interest in information on nutrition as such, in basic fundamentals of cooking, or in how to buy food.

Richmond housewives get their information from many and varied media. Newspapers and magazines, booklets and pamphlets, friends and neighbors, and the radio seem to be the most popular. Of all the media used, newspapers and magazines apparently reach the most housewives but although close to 9 out of 10 of the housewives interviewed reported they receive information on food or nutrition, only a little more than half said they got their ideas from newspapers and magazines.

Of greater importance is whether these housewives use the information they receive. The majority said they do use it.

Other sources through which nutrition information reaches Richmond housewives are nutrition classes or meetings, cooking classes they took when in school, and information brought home from school by their children.

The housewives in the sample were asked which media would be the best to use in getting information to other women like themselves. Their first choice was newspapers and magazines; others considered helpful were radio, booklets and pamphlets, and nutrition classes or meetings.

There is fairly general agreement among those who have worked in the field of nutrition education that a great many women are indifferent to the

¹ The rating scale used was developed cooperatively by the Bureau of Human Nutrition and Home Economics and the Bureau of Agricultural Economics.

² An adequate menu is defined here as one in which there are at least the minimum number of servings from each of the "Basic Seven" food groups, except milk, as given in the National Food Guide. Milk was counted as being adequate in the given menu if there was evidence that it had been served. The adequacy of milk bought for the family had to be considered separately as quantity was reported on a weekly basis.

nutrition program and do not use the information they receive or that is readily available. If certain primary motivations can be discovered, programs and projects could be built on these and so would probably gain a much wider acceptance than has been reached as yet.

To get at this problem, housewives were asked, "What do you think we can tell housewives like yourself that will get them to use information on nutrition?" After a housewife had offered her ideas, she was handed a checklist of eight suggested motivation techniques and asked to select the one she

thought best. The results suggest that two of the most effective methods to get housewives to use nutrition information would be:

1. To point out to them that the foods they should eat are better for the health and growth of their children, and

2. To point out to them that if they eat the foods they should, their family members are likely to have more energy and live longer.

EDWARD O. MOE and
ABRAHAM M. WEISBLAT

Bureau of Agricultural Economics

A Century of Farm Mechanization¹

Farm mechanization has made striking progress in recent years. This progress, more than any other single thing, enabled American farmers to turn out record production in World War II. And today farm machines are tools for peace, helping to grow food for a hungry world.

Progress of farm mechanization through the years can be measured by its achievements. It has meant increased production of food and fiber for human use, greater production per farm worker and per man-hour, and increased efficiency in farm operations. Other technological developments in farming which raised crop and livestock yields also have contributed importantly to these achievements.

One of the most important effects of mechanization over the last quarter of a century has been the displacement of horses and mules by tractors and other motor vehicles. Horse and mule numbers in the United States, at their peak during World War I, have decreased by about two-thirds. As a result more than 55 million acres of cropland are now free to grow food and fiber for human use, which once was used for growing horse and mule feed. Production from these released acres accounted for one-half of the increase in output of farm products for human use during the period between the two great wars. The rapid decline in horse and mule numbers during the last decade helped greatly in the sharp rise in food production.

Mechanization has increased farm production in other ways too. Greater timeliness in crop operations has been very important in some years. This can be illustrated for the Corn Belt in several recent years when late, wet springs seriously delayed corn planting. With the use of tractor power and equipment and early-maturing varieties of hybrid corn, the ground was prepared and planted, and large crops were made. These accomplishments would not have been possible in so short a time in the days when Corn Belt farmers depended mainly on animal power and equipment. Modern tractors and tractor equipment have also enabled farmers to do better work in the heavier farming jobs, especially those connected with land preparation and soil conservation practices.

Each farm worker now produces enough agricultural products to support himself and more than 13 others. In 1920 one farm worker had supported himself and 9 other persons, and a century earlier himself and only about 3 other persons. Mechanization has been the most important single factor in this rapid rise in productivity of farm labor. Machines in agriculture have accomplished much in reducing the hours of back-breaking work in farming as well as the total man-hours per unit of product. For example, each man-hour of farm work meant 44 per-

¹ This article is largely a brief summary of U. S. D. A. Misc. Publ. 630, "Progress of Farm Mechanization" by Martin R. Cooper, Glen T. Barton, and Albert P. Brodell.

cent more total production in 1945 than it did in 1917-21. Half of these savings in the man-hours used on each unit of product resulted from mechanization. Other technological developments, mostly increases in yields of crops and livestock, were responsible for the other half.

Widespread use of the modern tractor and its associated equipment has contributed most to these savings in farm man-hours per unit of product. A modern tractor and its equipment now saves about 850 hours of man labor compared with the time required with the animal power and equipment used a generation ago. A big part of these savings are due to the reduction in time required for horse and mule chores when work animals are displaced by tractors.

Important also in this picture are the combines, tractor-plows, tractor-cultivators, mechanical corn pickers, milking machines and other modern equipment which have replaced horsedrawn equipment and hand work. For example, a modern 15-horsepower tractor pulling a 2-bottom, 14-inch moldboard plow will plow 8 acres in a day but the same sized plow drawn by 5 good horses will plow only 4 acres in the same time.

In the Great Plains, modern farm power and equipment will produce and harvest an acre of wheat with around 3 hours of man labor, and sometimes even less, but in the days of horses and modern horse-drawn equipment, the average was about 8 man-hours per acre. Good roads, motor trucks, and automobiles also have cut many hours from the time required with horses and mules to haul farm products and to get supplies for farming and home use.

In spite of the advances so far made, 60 percent of all farm work—about 13 billion man-hours—is still done with the hands or with hand tools. Further mechanization of farm jobs will reduce the amount of hand work used in agriculture. The greatest challenge will be in livestock work, 75 percent of which is now hand labor.

Since 1870, total volume of farm power and machinery—including horses and mules, machinery and equipment—has increased more rapidly than total farm output. The first high point of farm power, machinery and equipment occurred in the early

1920's when farms were being mechanized and horse and mule numbers were being reduced some. The recent war-time peak in volume resulted from large increases in numbers of tractors, motor trucks, and labor-saving machines. By 1945, farmers had nearly $5\frac{1}{2}$ times as much farm power, machinery, and equipment as in 1870, and farm output for human use was nearly $4\frac{1}{2}$ times as great. On the other hand, farm employment had gone up less than half.

Total physical production costs (inputs of labor, power, land, and other resources) per unit of farm output were reduced about 26 percent during the last quarter century. Over the same period physical costs of labor, power, and machinery per unit of output went down about 30 percent. These large reductions in physical costs have occurred to some extent in all sections of the country and have benefited many individual farmers and agriculture as a whole. Many opportunities for further reductions still exist, especially in areas where improved machines and techniques are just coming into use.

Total physical costs of agricultural production have not changed much since 1910, although total farm output is greater. Labor, power, and machinery account for the bulk of total production inputs, and shifts in the relative importance of these three items have made possible the outstanding gains in production efficiency. Since World War I mechanical power and equipment have displaced both animal power and human power. More production per acre and per animal also have aided greatly in increasing production efficiency.

Past changes in prices paid by farmers for production goods and in prices received for farm products have overshadowed these trends in physical efficiency. As a result, farmers and their families at times have received very little for their labor and for the use of their land and other productive resources, despite their gains in production efficiency. In the depression of the 1930's, for example, efficiencies in production could not possibly offset the effects of 40-cent wheat, 6.5-cent cotton, and 3.5-cent hogs. Over the long run, and in prosperous times like the present, however, farmers as a group

have made significant gains in real income.

Favorable economic conditions during World War II and the postwar years have given a great impetus to farm mechanization. The trend toward increased use of machines undoubtedly will continue during the next farming generation. Our farmers by 1975 probably will have at least 5 million tractors compared with more than 3 million now. By 1975, we may have no more than 4 million horses and mules on farms.

Future effects of mechanization on farming will follow past trends. More cropland will be released from the job of feeding work animals displaced by machines. This will make possible farm output sufficient to feed and clothe from a third to a half of the expected increase in our total domestic population during the next farming generation. Greater timeliness in doing critical jobs, greater power and better adapted equipment for doing the important jobs of land preparation and

conservation practices will add to production capacity. Other technological advances will help. Generally, fewer farm workers will be needed to produce increasingly larger quantities of food and fiber.

Greater production efficiency will result in more production per farm worker and per man hour, per unit of power and machinery, per acre, and per animal, in line with past trends.

Improved machines will go to small farms as well as to the large ones. The next generation is likely to see some striking developments in mechanization in the South, which is now generally less mechanized than other areas. Continued technological progress, including more rural electrification, will give the farm worker and the country housewife more of the tools and facilities needed for production efficiency and comfortable living.

MARTIN R. COOPER

and GLEN T. BARTON

Bureau of Agricultural Economics

Peanuts Move Up as a Cash Crop

PEANUTS have moved up to third place among Cotton Belt cash crops. In the last 35 years commercial production of this crop has increased sixfold; acreage hogged off has gone up about four times. Peanut hay now runs to nearly 1½ million tons a year. A million acres are grazed by hogs. The once lowly goober has risen to an important place in southern agriculture.

There was a rapid expansion in peanuts in both World Wars. During the first war production almost tripled. This expansion was encouraged by boll-weevil damage in the lower Cotton Belt and by enlarged market outlets for peanuts. After that war, production fell off from wartime peaks, but resumed its longer-term upward trend at a level much above the prewar production. During the second war, production again went up rapidly. It now appears to be near the crest of a new wave of expansion. The 1947 crop was about 80 percent above prewar average figures.

Other changes have taken place along with this rapid increase in production. There have been changes in varieties, changes in uses of peanuts, and

changes in the location of production. During the First World War the large increase was in Spanish and runner nuts, and these were absorbed in part by increased crushings for oil. The demand for oil lessened when the war was over but there was an increased use of peanuts in confections and peanut butter was coming into general use. Peanut butter continued to expand. Again its demand increased rapidly during the Second World War; the part used for this purpose was more than one-half the cleaned and shelled production.

Most of the increased production during the first war took place in the Georgia-Florida-Alabama area and in Texas. In the Southeast, production increased from less than 100 million pounds in the 1910-14 period to more than 500 million in 1917-18, and from less than one-fourth to over one-half of the total production. After that war some of the new areas, particularly in Texas and the Piedmont section of Georgia and Alabama, shifted into other crops but the Southeastern region as a whole continued to account for about half the total production of pea-

nuts, thus replacing the Virginia-Carolina area as the major region of peanut production.

The year 1942 saw the greatest expansion in peanut production during World War II. Cotton was still under production controls so more land and labor was available for peanuts. But the discontinuance of cotton controls in 1943 left the two crops freely competitive. Again much of the expansion took place in the newer areas. In Oklahoma and Texas for example, average production during 1942-46 was two and one-half times the prewar (1935-39) average; in the Southeast it increased 75 percent as compared with an increase of only 15 percent in the Virginia-Carolina area.

The expanded peanut production has been maintained chiefly because of favorable prices for peanuts relative to the price of cotton. In most of the peanut areas, direct competition between the two crops has been of widespread importance.

The tobacco enterprise has been enough more profitable than either cotton or peanuts to encourage farmers to plant their allotted acreages in most of the areas where the crops are grown in combination.

A detailed analysis of the production situation for peanuts is contained in a recent report by the Bureau of Agricultural Economics and the Bureau of Plant Industry entitled "Peanuts in Southern Agriculture."

Relative returns, or profits from peanuts and alternative crops vary considerably in the different farming areas and on different groups of soils. Profitableness is also affected by the methods of production. Peanuts are now profitable on many farms, and in many areas, where production costs are relatively high.

In areas such as Virginia-North Carolina and to some extent, the Cross Timbers and Rio Grande Plains areas of Texas, peanuts apparently would still remain the most profitable enterprise on suitable soils, even though prices of peanuts were substantially lower. In other areas, as in northeast Texas and eastern Oklahoma, peanut production with lower prices would be more profitable than cotton only where

the production is mechanized or where soils are especially suitable for peanuts.

In the southeastern area, crop adjustments would depend on the extent of the price decline and the improvements that are made in production efficiency, including yields and mechanization of production. Under the price and yield conditions that have generally prevailed, returns from peanuts can be expected to be more favorable than returns from cotton in the peanut-producing areas of the Southeast, particularly in the older areas and on the relatively large group of soils that are excellent for peanuts.

Peanuts can be grown on a great many soil types but the range in yield that can be obtained is wide. In general, excellent soil types for peanuts have good drainage and yellow, brown, gray, or red sandy loam or they have fine sandy loam surface layers with friable sandy clay subsoils beginning 10 to 20 inches below the surface.

The peanut enterprise should be considered in relation to livestock enterprises as well as in its relation with cotton and tobacco. Hogging off peanuts has been a usual method of utilizing the crop, especially in the Southeast. With proper supplemental grazing crops and feeding practices, peanuts for hogging are probably the most efficient means of fattening hogs in the peanut areas of the Southeast. The practice also makes possible a better balanced farming system.

Some adjustment in harvested acreage to conserve resources appears needed in most of the intensive peanut areas. The proportion of suitable cropland used annually for peanuts is particularly high in old areas in Virginia-North Carolina and in Georgia-Alabama. Acreage is also high in the west Cross Timbers area of Texas. The loss of productivity from continued cropping may result in much idle or abandoned land unless proper practices are followed.

Recent developments in technology have substantially increased the efficiency of peanut production by making possible increased yields and reduced costs per acre. During the 1930's, yields were materially increased in the Virginia-Carolina and southeastern areas. Many farmers are finding that yields

per acre may be increased by improved varieties, seed treatment, dusting, proper soil management, and conservation practices. Opportunities for increasing yields appear to be brightest in the eastern part of the belt.

Production efficiency has been increased by use of modern machines in production and harvesting in many areas. On some farms, production has been completely mechanized. In the subhumid areas it is common to use tractor power and a side-delivery rake. Some farmers not only windrow peanuts with a side-delivery rake, but use a mobile picker or combine with a picker attachment to thresh the nuts when they are dry. With these methods, the labor requirements per ton of peanuts in the western part of the belt are only about half as much as the usual requirements in the eastern part.

Practices in the humid areas vary widely. Some farmers have nearly as much mechanization as is common in the western areas, but as climatic and other conditions are not so favorable, the usual methods of production have not changed greatly.

When planning for the postwar period, farmers will find it advisable to evaluate their present efficiency in producing peanuts as well as the possibilities for improving their efficiency through adopting mechanized methods and yield-improving practices. In addition, several interrelated over-all aspects must be considered. Among them are consumption prospects, price relationships, and Government programs and policies.

Prospects for consumption of peanuts are reasonably good. During the next few years, it will probably not equal wartime figures but the longer-term trends will probably again be resumed at levels much above prewar. Under assumed conditions of full employment the quantity of picked and threshed peanuts that will probably be in de-

mand has been estimated at perhaps four-fifths of the wartime production, or nearly 50 percent above the prewar level. Consumer incomes will be a major influence in determining the size of the market for edible nuts. A promising opportunity lies in the probable development of new products made from peanuts.

Market outlets seem likely to be large enough for many of the new growers to continue with peanuts, but some adjustments in production and prices will be required. If present favorable prices continue the current record peanut production might be maintained or even increased. But high prices may discourage the use of peanut products and the growth of new uses and markets. If prices are high, production could be above the demand within a year or two. Under present legislation this would call for production control.

Peanut farmers have a stake in developing programs that will avoid both low and high extremes in prices. They will certainly want to avoid the catastrophe of low prices. They will also want to avoid prices that are so high as to endanger long-run net returns. With no measure to guide adjustments and to cushion shocks, price disasters could occur.

On the other hand unduly higher prices, with accompanying production controls, can increase the average costs of production by preventing the concentration of peanuts on farms where their production is most efficient as well as driving peanuts out of part of the market and preventing the development of new uses and new markets. It must be remembered that the continued growth in consumption during the last 35 years has been the secret of the phenomenal increase in peanuts as a source of cash income.

KENNETH L. BACHMAN
Bureau of Agricultural Economics

Economic Trends Affecting Agriculture

Year and month	Industrial production (1935-39 = 100) ¹	Income of industrial workers (1935-39 = 100) ²	1910-14=100					Index of prices received by farmers (August 1909-July 1914=100)			
			Average earnings of factory workers	Wholesale prices of all commodities ³	Prices paid by farmers		Farm wage rates ⁴	Livestock and products			
					Com-modities	Com-modities, interest, and taxes		Dairy products	Poultry and eggs	Meat animals	All live-stock
1910-14 average.....	58	50	100	100	100	100	100	100	101	101	101
1915-19 average.....	72	90	152	158	151	150	148	148	154	163	158
1920-24 average.....	75	122	221	160	161	173	178	159	163	123	142
1925-29 average.....	98	129	232	143	155	168	179	160	155	148	154
1930-34 average.....	74	78	179	107	122	135	115	105	94	85	93
1935-39 average.....	100	100	199	118	125	128	118	119	109	119	117
1940-44 average.....	192	234	325	139	150	147	212	162	146	171	164
1945 average.....	203	290	403	154	180	172	350	197	196	210	203
1946 average.....	170	270	391	177	202	193	378	242	198	256	240
1947 average.....	187	323	438	222	246	231	408	269	221	340	293
1947											
March.....	189	313	425	218	240	226	-----	269	199	345	292
April.....	187	309	423	216	243	229	397	257	204	331	282
May.....	185	313	432	215	242	228	-----	241	203	327	275
June.....	184	319	440	216	244	230	-----	233	205	338	278
July.....	177	313	436	220	244	230	404	244	220	343	288
August.....	182	324	436	224	249	234	-----	258	224	349	295
September.....	186	337	448	230	253	238	-----	282	246	367	315
October.....	190	335	454	231	254	239	404	283	251	360	313
November.....	192	342	457	233	257	241	-----	293	242	338	304
December.....	192	355	470	238	262	245	-----	311	262	352	320
1948											
January.....	193	350	465	242	266	251	425	313	231	379	328
February.....	193	-----	-----	235	263	248	-----	307	218	331	300
March.....	-----	-----	-----	-----	262	247	-----	298	212	342	302

Year and month	Index of prices received by farmers (August 1909-July 1914=100)									Parity ratio ⁵
	Crops								All crops and live-stock	
	Food grains	Feed grains and hay	To-bacco	Cotton	Oil-bearing crops	Fruit	Truck crops	All crops		
1910-14 average.....	100	101	102	96	98	99	-----	99	100	100
1915-19 average.....	193	164	187	168	187	125	-----	168	162	106
1920-24 average.....	147	126	192	189	149	148	143	160	151	86
1925-29 average.....	140	119	172	145	129	141	140	143	149	89
1930-34 average.....	70	76	119	74	72	94	106	86	90	66
1935-39 average.....	94	95	175	83	106	83	102	97	107	84
1940-44 average.....	123	119	245	131	159	133	172	143	154	103
1945 average.....	172	161	366	171	215	220	224	201	202	117
1946 average.....	201	195	382	228	244	226	204	226	233	121
1947 average.....	271	246	380	261	335	194	249	261	278	120
1947										
March.....	283	212	390	257	360	215	299	266	280	124
April.....	277	223	387	260	358	223	295	269	276	121
May.....	276	218	390	270	326	222	286	268	272	119
June.....	253	240	390	275	318	228	215	262	271	118
July.....	251	253	390	289	314	215	189	263	276	120
August.....	246	270	383	267	308	177	211	255	276	118
September.....	278	297	352	252	311	181	179	254	286	120
October.....	302	284	357	247	344	166	238	261	289	121
November.....	312	283	354	257	349	151	272	268	287	119
December.....	318	305	377	275	367	149	294	281	301	123
1948										
January.....	322	318	377	267	377	135	320	284	307	122
February.....	251	261	374	248	333	136	320	257	279	112
March.....	260	284	372	256	339	140	295	262	283	115

¹ Federal Reserve Board represents output of mining and manufacturing; monthly data adjusted for seasonal variation.

² Computed from data furnished by Bureau of Labor Statistics and Interstate Commerce Commission on pay rolls in mining, manufacturing, and transportation; monthly data adjusted for seasonal variation. - Revised April 1947.

³ Bureau of Labor Statistics.

⁴ Monthly data adjusted for seasonal variation.

⁵ Revised.

⁶ Ratio of prices received to prices paid for commodities, interest, and taxes.

⁷ 1924 only.

Fight Against Rats and Insects

UNDER leadership of the Department's Office for Food and Feed Conservation, with the cooperation of Federal and State agencies, farmers are being rallied in an all-out fight against insects and rodents.

In the winter wheat States, fumigation is being urged to kill insects in farm-stored grains. In the Corn Belt States an attack against the destructive corn borer is being made ready. Live-stock growers everywhere are being urged to use modern insecticides to control the many insects whose annual toll of lost meat and milk production, damaged hides, and wasted feed runs into millions of dollars.

A "war on rats" that was declared by the Department in the fall of 1947 has been spreading across the Nation

until today thousands of rural communities have held campaigns to encourage rat-killing and ratproofing. These and other measures are being urged to help stop waste and to use the Nation's food and feed supplies wisely.

The Department today, in its food and feed conservation effort, is working with farmers, consumers, and industry—but it is on farms that major contributions are expected. The farm campaign is being directed along these three avenues:

(1) *Reducing physical waste of food and feed supplies.* Farmers are being urged to fumigate their farm-stored grain and use good storage facilities in order to prevent damage from insects and the elements, to kill rats and rat-

Prices of Farm Products

[Estimates of average prices received by farmers at local farm markets based on reports to the Bureau of Agricultural Economics. Average of reports covering the United States weighted according to relative importance of district and State]

Commodity	5 year average		Mar. 15, 1947	Feb. 15, 1948	Mar. 15, 1948	Parity price, Mar. 15, 1948
	August 1909-July 1914	January 1935-December 1939				
Wheat (bushel).....dollars	0.884	0.837	2.44	2.12	2.21	2.18
Rye (bushel).....do	.720	.554	2.81	1.94	2.14	2.78
Rice (bushel).....do	.813	.742	2.36	3.12	3.01	2.01
Corn (bushel).....do	.642	.691	1.50	1.92	2.11	1.59
Oats (bushel).....do	.399	.340	.80	1.04	1.17	.986
Barley (bushel).....do	.619	.533	1.44	1.72	1.87	1.53
Sorghum grain (100 pounds).....do	1.21	1.17	2.57	2.77	3.36	2.99
Hay (ton).....do	11.87	8.87	17.47	19.60	19.70	29.30
Cotton (pound).....cents	12.4	10.34	31.89	30.71	31.77	30.63
Cottonseed (ton).....dollars	22.55	27.52	88.00	88.60	87.90	55.70
Soybeans (bushel).....do	4.96	4.954	3.67	2.97	3.23	2.37
Peanuts (pound).....cents	4.8	3.55	9.91	10.0	10.1	11.9
Flaxseed (bushel).....dollars	1.69	1.69	8.15	5.73	5.86	4.17
Potatoes (bushel).....do	4.697	.717	1.47	1.93	1.96	1.84
Sweetpotatoes (bushel).....do	.878	.807	2.35	2.31	2.37	2.17
Apples (bushel).....do	.96	.90	3.02	2.00	1.95	2.37
Oranges on tree (box).....do	2.29	1.11	1.36	.89	1.14	3.76
Hogs (hundredweight).....do	7.27	8.38	126.50	21.60	21.80	18.00
Beef cattle (hundredweight).....do	5.42	6.56	118.00	19.50	20.70	13.40
Veal calves (hundredweight).....do	6.75	7.80	119.60	23.00	23.40	16.70
Lambs (hundredweight).....do	5.88	7.79	120.30	20.70	20.00	14.50
Butterfat (pound).....cents	26.3	29.1	73.5	84.9	80.3	66.0
Milk, wholesale (100 pounds).....dollars	1.60	1.81	4.27	5.00	4.88	3.89
Chickens (pound).....cents	11.4	14.9	26.6	26.0	27.2	28.2
Eggs (dozen).....do	21.5	21.7	40.1	45.0	42.6	46.2
Wool (pound).....do	18.3	23.8	41.6	41.0	40.8	45.2

¹ Revised.

² Comparable base price, August 1909-July 1914.

³ Comparable price computed under sec. 3 (b) Price Control Act.

⁴ 1919-28 average of \$1.12 per bushel used in computing parity.

⁵ 1919-28 average for computing parity price.

⁶ Adjusted for seasonal variation.

proof buildings in order to reduce damage done by these destructive rodents, to reduce losses from fire, and to reduce losses from malpractices such as careless handling of milk and other perishables.

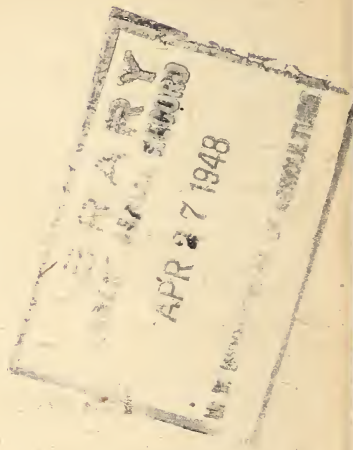
(2) *Utilizing supplies more efficiently.* Farmers are being urged to use balanced rations in feeding their poultry and livestock, to substitute good quality hay, roughage, and pasture for grains as much as possible, to cull flocks and herds carefully and get rid of low-producers, and to market animals at weights which contribute both to production efficiency and grain conservation.

(3) *Producing more efficiently.* Farmers are being urged to make full use of modern agricultural practices in order to produce with utmost efficiency, including scientific livestock management (sanitation, disease control, parasite control), treatment of seed grains, use of chemical herbicides (such as 2, 4-D to help control weeds in small grains and corn), more effective use of chemical and barnyard fertilizers, and use of improved methods of grassland farming and hay and ensilage production.

The work being done with farmers, as outlined above, represents an intensification of the Department's educational effort that has been taking place for years, directed today toward a specific goal of food and feed conservation to help meet the world's desperate need for adequate food. Insects and rodents are prominent targets in that effort. They have no place in America's horn of plenty.

KENNETH W. OLSON

Office for Food and Feed Conservation



PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300
(GPO)

UNITED STATES
DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
WASHINGTON 25, D. C.
OFFICIAL BUSINESS